

## **CABLE FIXED DEVICE**

### **BACKGROUND OF THE INVENTION**

#### **1. Field of the Invention:**

The present invention relates to a cable fixed device and, more particularly, to a movable hidden cable fixed device that does not occupy space when not in use.

#### **2. Description of the Related Art:**

Cable fixed devices are usually distributed at the periphery in a boat and are fixed on a deck of a boat body. They are used to fix cargo on the boat or are used to tie cables when the boat is berthed at a dock.

As shown in FIG. 1, a conventional cleat structure for boat comprises a transverse rod 10 and two vertical rods 12 connected below the transverse rod 10. The transverse rod 10 is fixedly locked onto a boat deck 16 with two screw bolts 14 through the two vertical rods 12, and is provided for d cable tying. When cleats are used to fix cargo, the cable is wound around the cargo, and two ends of the cable are fixed at the two vertical rods of different cleats, thereby fixing the cargo and preventing the cargo from easily loosening or moving. When the boat is berthed at a dock, one end of the cable is wound around the vertical rods of a cleat and tightly tied up, while the other end of the cable is fixed at the dock, thereby firmly tying the boat to prevent it from

drifting away from the dock.

However, because existent cleats for boat are projective from and fixed on the boat deck, they not only occupy the space of the boat deck, but also may easily stumble careless people passing by  
5 to cause hazards. Besides, because conventional cleats are fixed projective objects on the deck, there is much limit to their installation positions. They can only be installed on the deck at the edge of the boat body to avoid passageways or activities places.

Accordingly, the present invention aims to propose a cable  
10 fixed device for boat to effectively resolve the problems in the prior art.

## **SUMMARY OF THE INVENTION**

The main object of the present invention is to provide a cable  
15 fixed device, which can be conveniently unfolded when in use and can be conveniently hidden when not in use, hence having the advantage of not occupying space and convenient use.

Another object of the present invention is to provide a hidden cable fixed device for boat, which can effectively prevent people  
20 passing by from stumbling to provide a high-safety cable fixed device.

Another object of the present invention is to provide a cable fixed device, which can be installed at any convenient place

because of its movable hidden structure.

To achieve the above objects, the cable fixed device comprises a seat body, a movable handle, two elastic components, a driving plate, and a coupling member. The seat body has a receiving cavity  
5 inside. The movable handle longitudinally connects onto the seat body, and can slide up and down upon the seat body. The elastic components are disposed in the sliding direction between the movable handle and the seat body. The driving plate is disposed in the receiving cavity of the seat body. The driving plate has a  
10 longitudinal track that has substantially two V-shaped part. The coupling member is fixedly fastened to the movable handle and coupled to the track at the driving plate and adapted to guide movement of the movable handle along the track and to selectively lock the movable handle between the extended operative position  
15 and the received non-operative position.

## **BRIEF DESCRIPTION OF THE DRAWINGS**

FIG. 1 is a structure diagram of a conventional cable fixed device.

FIG. 2 is a diagram of a cable fixed device according to the  
20 present invention.

FIG. 3 is a sectional assembly view of the cable fixed device according to the present invention.

FIG. 4 is a sectional view of FIG. 3 when rotated horizontally

through 90°.

FIG. 5 is a plain view of the driving plate for the cable fixed device according to the present invention.

FIG. 6 is a plain view of the coupling block for the cable fixed  
5 device according to the present invention.

FIG. 7 is another sectional view of the present invention, showing the movable handle received inside the seat body.

FIG. 8 is a sectional view of FIG. 7 when rotated horizontally through 90°.

10 FIGS. 9(a)~9(g) are continuous drawings explaining the action of the coupling block relative to the track of the driving plate when the movable handle moved from the received non-operative position to the extended operative position.

FIGS. 10(a)~(e) are continuous drawings explaining the action  
15 of the coupling block relative to the track of the driving plate when the movable handle moved from the extended operative position to the received non-operative position.

#### **DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT**

As shown in FIGs. 2 and 3, a cable fixed device comprises a  
20 seat body 20 having a receiving cavity 21 therein. A fillister 23 is provided at the inside top of the receiving cavity 21. Two longitudinal vertical holes 22 are disposed in the seat body 20 at two sides of the receiving cavity 21. A movable handle 24

longitudinally connects the seat body 20, and can slide up and down on the seat body 20. Two elastic components, usually being springs 26, are disposed in the sliding direction between the movable handle 24 and the seat body 20. The movable handle 24  
5 comprises a transverse rod 28 and two vertical rods 30 connected below the transverse rod 28. And a fixing rod 32 is transversely connected between the two vertical rods 30. And a square block 34 is provided around the fixing rod 32. The square block 34 is corresponding to the fillister 23 of the receiving cavity 21. The  
10 movable handle 24 uses the two vertical rods 30 to connect the springs 26 so as to be disposed in the sliding direction in the vertical holes 22 of the seat body 20. A slidable connection is thus formed between the movable handle 24 and the seat body 20. A groove 36 is disposed at the top of the seat body 20 corresponding  
15 to the position exactly below the transverse rod 28 of the movable handle 24 so as to receive and hide the transverse rod 28. Wherein, because there is a fillister 23 provided at the inside top of the receiving cavity 21, the upper part of the bulging square block 34 of the fixing rod 32 will be contained in the fillister 23 while the  
20 fixing rod 32 moves upward and contact with the top of the receiving cavity 21.

A driving piece 40 is disposed in the receiving cavity 21 of the seat body 20. Referring to FIG. 4, which is a sectional view of FIG.

3 when rotated horizontally through 90°, the driving plate 40 is defined a longitudinal track 42. As illustrated in FIG. 5, the track 42 comprises a longitudinally extended deep groove 422, and a shadow groove, which is formed of an invertedly disposed U-shaped upper positioning section 428 corresponding to the upper part of the center groove 422, a substantially V-shaped lower positioning section 424 downwardly extended from one end of the upper positioning section 428 corresponding to the left side of the lower part of the center groove 422, and a substantially V-shaped lower guide section 426 upwardly extended from one end of the lower positioning section 424 corresponding to the right side of the lower part of the center groove 422 and connected to the other end of the upper positioning section 428. Referring to FIG. 6 simultaneously, a coupling member 44 is composed of a guide disk 442 and a butterfly control block 444. One side of the coupling member 44 is fixedly fastened to the square block 34 of the fixing rod 32, and the other side is coupled to the center groove 422 of the track 42 and adapted to guide vertical movement of the movable handle 24 along the track 42, and a butterfly control block 444 fastened pivotally with the guide disk 442 and adapted to control movement and positioning of the coupling member 44 in the track 42. The butterfly control block 444 can be moved vertically along the center groove 422 only when the two opposite

long sides of the butterfly control block 444 maintained in parallel to the upper positioning section 428. When the user pressed the movable handle 24 downwards from the extended operative position to the received non-operative position, the butterfly control block 444 is stopped in the lower positioning section 424 to hold the movable handle 24 in the received non-operative position. When the user pressed the movable handle 24 again, the butterfly control block 444 is disengaged from the lower positioning section 424 and moved along the lower guide section 426 into the upper positioning section 428 (due to the upward pressure from the compression spring 26) to hold the movable handle 24 in the extended operative position.

In the above-mentioned structure, the fixing rod 32 is a cylinder, so the setting of the square block 34 is capable of increasing the combination area of the coupling member 44 with the fixing rod 32 for increasing the stability of the combination. Further more, because there is a fillister 23 provided at the inside top of the receiving cavity 21, the square block 34 bulging out of the fixing rod 32 will be contained in the fillister 23 while a user pulls the movable handle 24 upward to make the fixing rod 32 move upward and contact the top of the receiving cavity 21. The bearing is the square block 34 and the fixing rod 32 but not merely the bulging square block 34, so as the cable fixed device could

bear stronger pulling force when used for fixing cables.

As shown in FIGS. 7 and 8, the movable handle 24 of the cable fixed device is usually in the hidden state. And at this moment, the state of the coupling block 44 is as shown in FIG. 9(a). The butterfly control block 444 is stopped in the lower positioning section 424 to hold the coupling block 44 in the lower positioning section 424. When a cable is to be wound and tied up, it is only necessary to press the movable handle 24 downwards with the hand. After the movable handle 24 transfers the external force to the coupling member 44, as shown in FIG. 9(b), the point C of the butterfly control block 444 is forced into contact with a part of the lower guide section 426, thereby causing the butterfly control block 444 to be rotated counter-clockwise to the status shown in FIG. 9(c). When continuously pressing the movable handle 24, the coupling block 44 is moved to the bottom end of the center groove 422. At this time, the butterfly control block 444 is forced against a part of the lower guide section 426 to rotate counter-clockwise continuously to the status shown in FIG. 9(d). When released the hand from the movable handle 24, at this time, the compression spring 26 forces the movable handle 24 vertically upwards as shown in FIG. 9(e), and the butterfly control block 444 is forced against a part of the lower positioning section 424 to rotate counter-clockwise continuously to the status shown in FIG. 9(f),



enabling the coupling block 44 to be moved to the top end of the track 42 as shown in FIG. 9(g). At this time, the movable handle 24 is extended out from the seat body 20, as shown in FIGS. 3 and 4. This is the unfolded state.

5        When a user needs not to tie a cable, he applies a vertical downward external force to the movable handle 24. Similarly, during downward stroke of the movable handle 24, the coupling block 44 is moved from the upper limit position as shown in FIG. 10(a) toward the position shown in FIG. 10(b). When reached the  
10    position shown in FIG. 10(b), the point B of the butterfly control block 444 is forced against a part of the lower guide section 426, thereby causing the butterfly control block 444 to rotate counter-clockwise as shown in FIG. 10(c). When released the hand from the movable handle 24 at this time, the compression spring  
15    26 immediately forces the movable handle 24 upwards, thereby causing the butterfly control block 444 to be forced against a part of the lower positioning section 424 as shown in FIG. 10(d) and then rotated counter-clockwise till the point C is stopped at the lower positioning section 424 as shown in FIG. 10(e), and  
20    therefore the movable handle 24 is hidden in the seat body 20. Thereby, the above reciprocating actions can be continually repeated.

Although particular embodiments of the invention have been

described in detail for purposes of illustration, various modifications and enhancements may be made without departing from the spirit and scope of the invention. Accordingly, the invention is not to be limited except as by the appended claims.